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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/084,967 | 03/01/2002 | Reimar Lenz | 1964/50924 | 2197 |
| 7590 | 04/06/2006 | | EXAMINER | |
| Crowell & Moring, L.L.P. P.O. Box 14300 Washington, DC 20044-4300 | | | NGUYEN, LUONG TRUNG | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2622 | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/084,967 | LENZ, REIMAR | |
| | Examiner | Art Unit | |
| | LUONG T. NGUYEN | 2622 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 1-20 is/are rejected.
- 7) Claim(s) ____ is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 01 March 2002 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 06/05/02.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: ____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The disclosure is objected to because of the following informalities:

In the specification, page 8, line 30, sampled value at T2' should be changed to --sampled value at T2--.

Appropriate correction is required.

Claim Objections

3. Claims 1-20 are objected to because of the following informalities:

Claim 1 (line 7), "the wanted signal" should be changed to --a wanted signal--.

Claim 3 (line 2), claim 8 (line 2), "the particular pixels is" should be changed to --a particular pixel is--.

Claim 3 (line 4), claim 8 (line 4), "the second, digital" should be changed to --a second, digital--.

Claims 2-20 are objected as being dependent on claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 4-5, 9-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 (lines 5-6), claim 9 (lines 5-6), claim 10 (lines 5-6), claim 11 (lines 5-6) recite limitation “is outputted as the wanted signal,” this is unclear because it is not known that what is outputted as the wanted signal.

Claims 5, 15-16 are rejected as being dependent on claim 4.

Claims 12, 17, 20 are rejected as being dependent on claim 9.

Claims 13, 18 are rejected as being dependent on claim 10.

Claims 14, 19 are rejected as being dependent on claim 11.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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7. Claims 1 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Yadid-Pecht (US 6,831,689).

Regarding claim 1, Yadid-Pecht discloses a digital camera having a CMOS image sensor (electronic camera having optical imagers, figure 1, column 1, lines 19-28, column 4, lines 52-67) with a plurality of pixels each storing within an exposure time (integration time of each pixel, column 4, lines 52-67) a brightness-dependent charge which is out-putted as a pixel signal under the control of a control device (control circuit 14, figure 1, column 5, lines 5-56) and a correction device which, after a pixel RESET of the image sensor, forms the difference from first and second sampled values detected toward the onset and end of the exposure time for the pixel, and outputs the second sampled value reduced by the first sampled value as the wanted signal (column 5, lines 5 -56), characterized in that the control device delays the sampling for the first sampled value by a predetermined delay time (a constant predetermined delay, column 5, lines 35-56) after RESET.

Claim 7 is a method claim of apparatus claim 1. Therefore, claim 7 is rejected for the reason given in claim 1.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yadid-Pecht (US 6,831,689) in view of Bell et al. (US Patent Application 2004/0212704).

Regarding claim 2, Yadid-Pecht fails to specifically disclose the delay time corresponds to about 1 percent to 20 percent, preferably 2 percent to 10 percent, of the exposure time. However, Bell et al. teaches a method to reduce noise in an imaging system, in which a delay time of 500 micron second corresponds to 20 percent of an integration time of 2.5 ms (page 3, paragraph [0036]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Yadid-Pecht by the teaching of Bell et al. in order to reduce the effect of noise (page 1, paragraph [0020]).

10. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yadid-Pecht (US 6,831,689) in view of Gowda et al. (US 6,115,066).

Regarding claim 3, Yadid-Pecht fails to specifically disclose the first sampled value for a particular pixel is stored digitally in an image memory, and the stored, digital sampled value is subtracted digitally from the second, digital sampled value. However, Gowda et al. teaches a CMOS image sensor with direct digital correlated double sampling circuitry, in which a first digital codeword corresponds to first sampling interval is stored in digital register 42j, the first codeword is subtracted from the signal value corresponding to a second codeword which corresponds to second sampling interval (figure 3-4, column 3, lines 15-26, column 6, line 20 – column 7, line 20). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Yadid-Pecht by the teaching of Gowda

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et al. in order to eliminate errors due to transistor mismatches, offsets and noise in the final image data (column 7, lines 12-16).

11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable 103(a) over Yadid-Pecht (US 6,831,689) in view of Gowda et al. (US 6,115,066) further in view of Koren et al. (US 6,831,686).

Regarding claim 6, Yadid-Pecht and Gowda et al. fail to specifically disclose wherein a dark value offset memory is provided, and an offset value belonging to a particular pixel and prestored in the dark value offset memory is subtracted from the first sampled value of said pixel. However, Koren et al. teaches a device for the exposure-dependent noise correction in image sensor, in which offset value is stored in RAM, then the offset value is subtracted in summer S1 (figure 2, column 3, lines 4-36). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Yadid-Pecht and Gowda et al. by the teaching of Koren et al. in order to obtain a device for noise correction image sensor, in which fixed pattern noise correction can be coordinated with the illumination conditions and the correction components can be switched on and off individually (column 1, lines 52-55).

12. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yadid-Pecht (US 6,831,689) in view of Bell et al. (US Patent Application 2004/0212704) further in view of Gowda et al. (US 6,115,066).

Regarding claim 3, Yadid-Pecht and Bell et al. fail to specifically disclose the first sampled value for a particular pixel is stored digitally in an image memory, and the stored, digital sampled value is subtracted digitally from the second, digital sampled value. However, Gowda et al. teaches a CMOS image sensor with direct digital correlated double sampling circuitry, in which a first digital codeword corresponds to first sampling interval is stored in digital register 42j, the first codeword is subtracted from the signal value corresponding to a second codeword which corresponds to second sampling interval (figure 3-4, column 3, lines 15-26, column 6, line 20 – column 7, line 20). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Yadid-Pecht and bell et al. by the teaching of Gowda et al. in order to eliminate errors due to transistor mismatches, offsets and noise in the final image data (column 7, lines 12-16).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kozlowski et al. (US 6,493,030) discloses low-noise active pixel sensor for imaging arrays with global reset.

Kozlowski et al. (US 6,888,572) discloses compact active pixel with low noise image information.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUONG T. NGUYEN whose telephone number is (571) 272-7315. The examiner can normally be reached on 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID L. OMETZ can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN
04/01/06

Luongt Nguyen

LUONG T. NGUYEN
PATENT EXAMINER